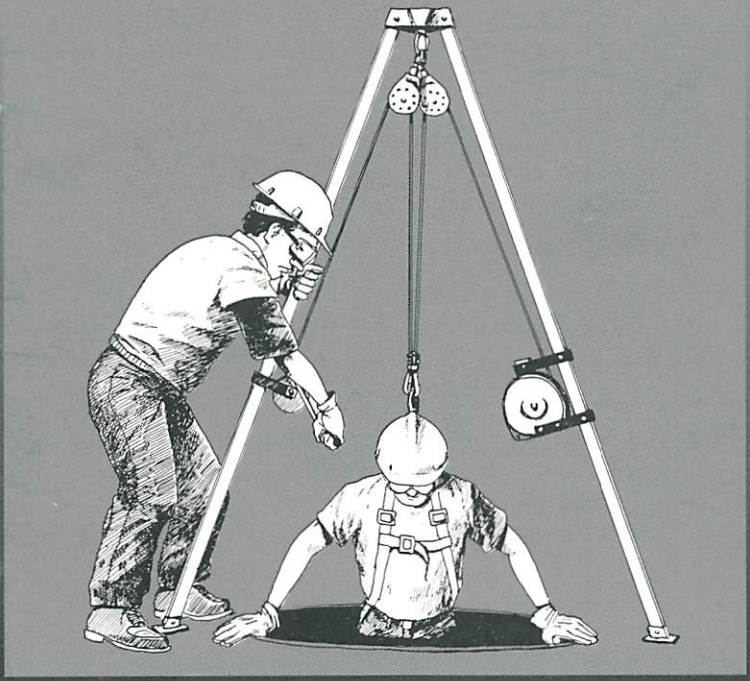
CONFINED SPACE

Non-Entry Rescue

CONFINED SPACE



Confined Space Non-Entry Rescue

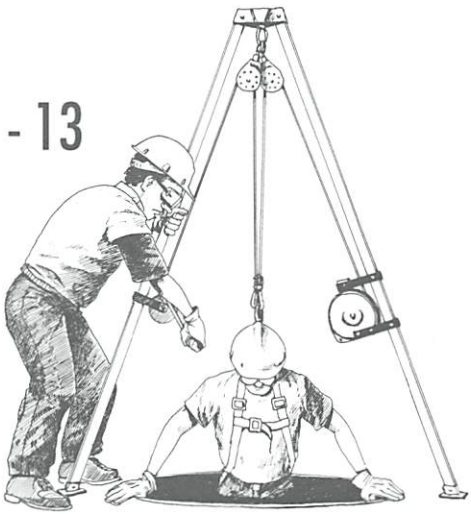
This employee handbook is one of a series of fully-illustrated employee handbooks, informative posters and broadcast-quality video training programs produced by Coastal Video Communications Corporation. Each product is the result of painstaking analysis, design, development and production by the instructional designers and technical specialists on our staff.

Our catalog is constantly being revised and expanded, so we would appreciate any comments on current titles or suggestions for future ones. For further information on any Coastal product, or to receive a free catalog, call 800-767-7703 or write:

Coastal Video Communications Corp.
3083 Brickhouse Court
Virginia Beach, VA 23452
Fax: 804-498-3657

This handbook is for educational purposes only. Nothing herein is to be regarded as indicating approval or disapproval of any specific practice or product.

Contents



Introduction

In a confined space emergency, seconds count. Your life may depend on your ability to exit a space fast.

- A trained rescue team may not arrive on the scene in time to save you.
- As many as 60 percent of those who die in confined spaces are would-be rescuers — well-intentioned, usually untrained, co-workers who enter in a desperate attempt to help.

Fortunately, you can often exit a space fast and safely in an emergency by using these techniques:

- **Self-rescue** — Evacuating a space by yourself at the first sign of trouble
- **Non-entry rescue** — When your attendant uses a retrieval system to pull you out of the space without entering the space.

Neither technique puts others at risk by entering the space. Yet both require advance training and ongoing teamwork between entrant and attendant.

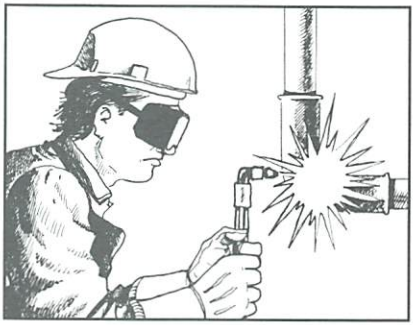
Hidden Dangers

Many confined space accidents occur simply because workers fail to recognize the hazards involved in entering a space. A confined space is:

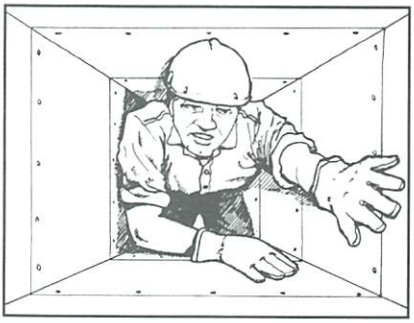
- Any enclosed area that is not designed for continuous human occupancy like a storage tank, process vessel, pit, vat, boiler or sewer
- Large enough for you to enter and work in
- An area with limited or restricted openings that could make it difficult to enter or exit.

Certain confined spaces are so hazardous that the Occupational Safety and Health Administration (OSHA) requires a written permit program to protect workers who enter them. A permit space is a confined space with any of these characteristics:

- It has, or has the potential for, a hazardous atmosphere such as flammable or toxic vapors or too little oxygen. Work done in or around the space, such as welding, sanding, scraping and using cleaning solvents, can create or increase a hazardous atmosphere.



- It contains or may contain a material that could surround or engulf you — liquid or finely-divided solid material such as sawdust or grain.
- It has an internal shape that could trap or asphyxiate you. For example, walls that converge inward or a floor that slopes downward and tapers to a smaller cross-section.



It has any other characteristic that is recognized as a serious safety or health hazard. This could include moving machinery, electrical hazards, the potential for falls and high temperatures.

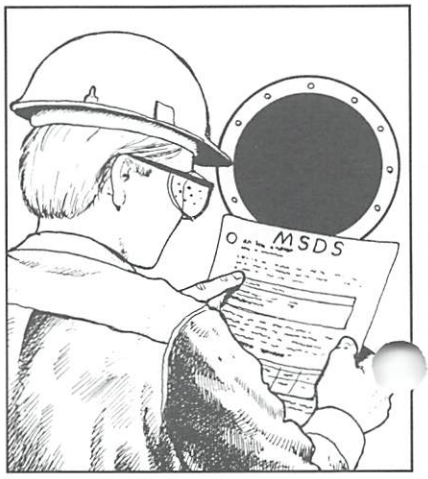
Preventing Accidents

Your employer will take steps to protect you before you are authorized to enter a permit space. These include:

- Identifying the hazards in the space
- Taking measures to control them such as isolation, lockout/tagout, atmospheric testing and ventilation
- Training you to follow safe entry and work procedures
- Providing you with appropriate safety equipment
- Ensuring that a thoroughly trained and equipped emergency rescue team is available if needed.

Here's what you should do before you enter a confined space:

- Read the written permit.
- Check the Material Safety Data Sheet (MSDS) for any hazardous chemical you may use or find in the permit space. The MSDS will tell you how to protect yourself against exposure and what to do if you are exposed.
- Ask yourself what could go wrong and plan what you will do if it does.



ESSENTIAL READING

Always read the written permit before you enter a space. It will:

- Give you the results of atmospheric testing
- Tell you how to summon rescue and emergency services
- Specify how you should communicate with your attendant
- List equipment you must use for safe entry and work such as PPE, testing equipment, mechanical rescue retrieval systems and harnesses
- Name the entry supervisor, attendants and all employees authorized to enter the space.

Going In

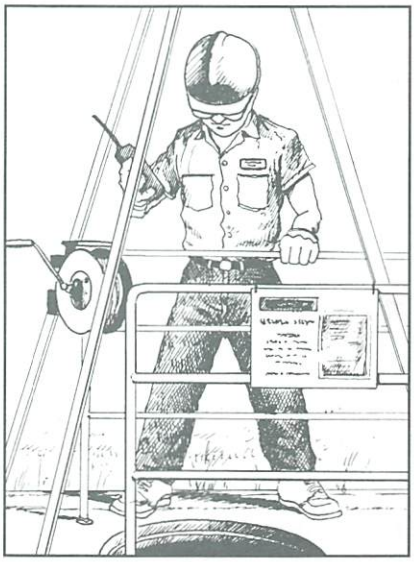
Roles of Entrants and Attendants

Both self-rescue and non-entry rescue require careful teamwork between entrant and attendant. The roles are complementary and sometimes interchangeable. If you are an entrant:

- You are authorized by your employer to enter a permit space.
- You must be alert for any sign that you're being exposed to toxins or other hazards. For example, loss of fine muscle control, confusion, difficulty breathing and ringing in ears can indicate oxygen deficiency.
- You must be aware of conditions prohibited on the entry permit such as improper ventilation.
- You should use all personal protective equipment exactly as specified on the permit. For instance, an air-purifying respirator which filters impurities from the air without supplying oxygen cannot be substituted for a supplied-air respirator which corrects oxygen deficiency.
- At the first sign of any hazard, you should notify your attendant and begin self-rescue.
- If the attendant orders you to evacuate, do so immediately.

If you are an attendant:

- You are stationed outside one or more permit spaces to monitor the location and condition of authorized entrants.
- You are specially trained to recognize entry hazards and to detect any effects on entrants.
- You must maintain effective contact with all authorized entrants throughout entry.
- You act as the entrant's eyes and ears outside the space, remaining constantly alert for potential hazards in or around the space.
- You order entrants to evacuate the space the moment you detect any hazardous situation.



Communicate, Communicate, Communicate!

Effective, reliable communication can be a lifeline. Some rules:

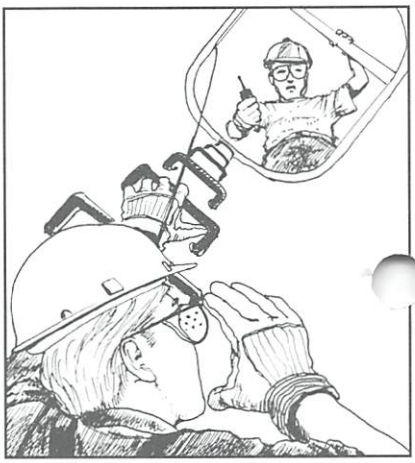
- Entrant and attendant must maintain contact during entry. Set a standard routine so the attendant can detect subtle changes in entrant speech or behavior.
- If entrant will not be in view of attendant, you may need to use two-way radios, television or other continuous monitoring equipment with alarms and voice contact.

Have a backup communication system in case of technical problems or if entrant wears hearing protection. For instance, several pulls on a tag line can be a signal to evacuate.

Rescue

Self-Rescue

Self-rescue requires teamwork.

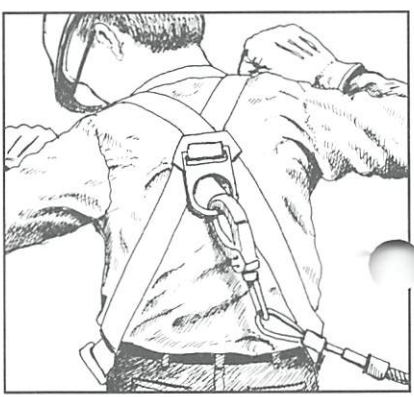


- At the first sign of trouble, the entrant notifies the attendant and begins to evacuate immediately — without taking time to notify other workers in the space.
- Upon being notified that the entrant is evacuating, the attendant warns other workers in the space to evacuate and summons the rescue team if necessary.

Non-Entry Rescue

When the entrant cannot self-evacuate, the attendant may need to use non-entry rescue techniques.

The attendant should use a mechanical device like a hand-cranked, man-rated winch with a tripod. OSHA requires that a mechanical device be available to retrieve personnel from vertical-entry permit spaces more than five feet deep. A winch with a 25:1 mechanical advantage lets you lift 250 pounds with ten pounds of force. Here's how it works:

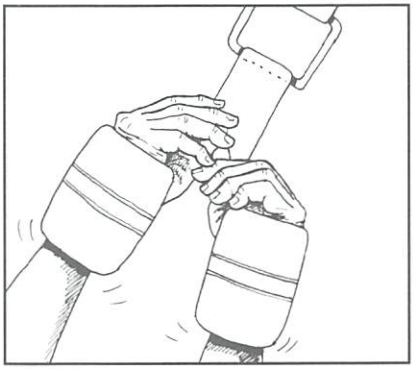


- The entrant wears a chest or full-body harness connected to the retrieval line. A full-body harness is safer because it is more secure and there is less risk of injury from a fall because weight is more evenly distributed.

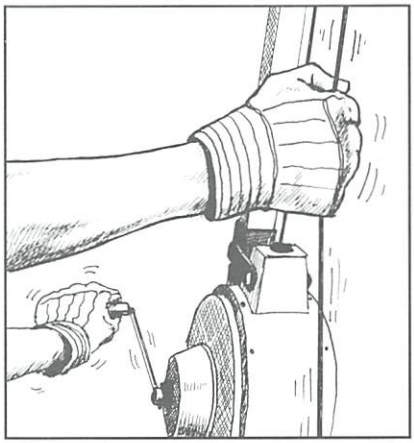
- The winch's wire cable attaches to the entrant's body harness, so the attendant can crank the entrant back out in an emergency.

- A retrieval line should be attached to the harness at the center of the back near shoulder level. This minimizes slumping and makes the body as straight as possible when pulling it out.

- Wristlets may be used to pull the entrant through a very small opening. The entrant is pulled out with arms extended overhead creating a smaller profile. Wristlets can cause injury if the line is pulled too hard or if used to break a fall. OSHA allows their use only if absolutely necessary.

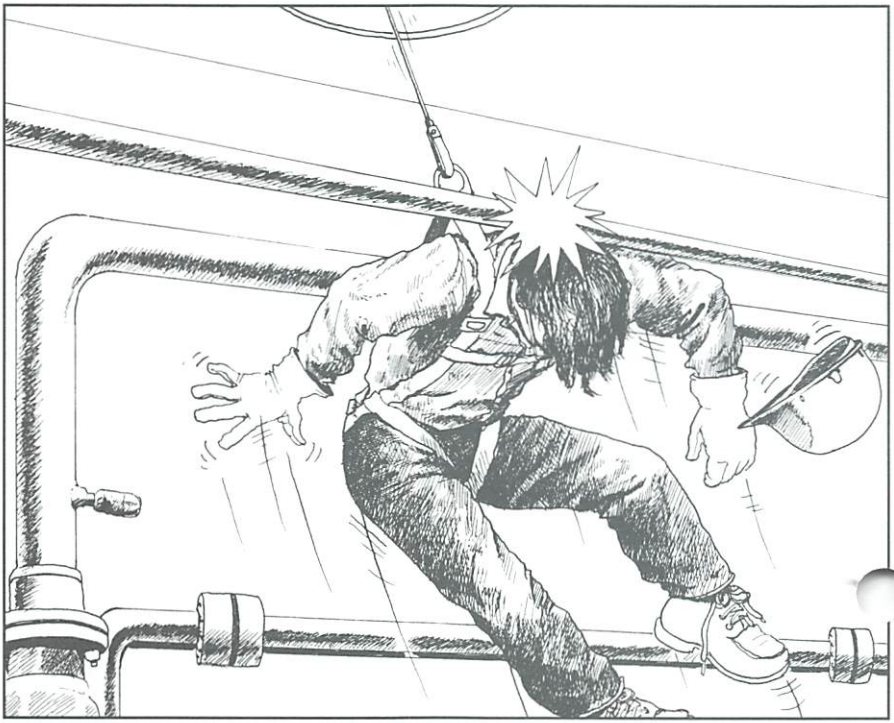


- Cranking an entangled person can quickly cause injury. Any extra pressure on the line means the entrant may have become entangled in a ladder or other obstacle — stop cranking immediately. Back off by lowering the cable a bit, then move the cable with your hands to disentangle.



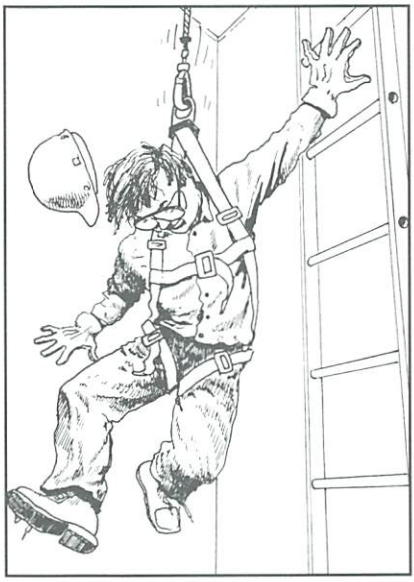
- Never try to drag entrant out of the space without mechanical assistance. You could injure your back trying to move the victim or be overcome by fumes in the space. When removing a victim from a vertical space you are required to use mechanical assistance.

- Do not use a motorized crane, winch or other machine to pull an entrant out. Powered equipment can move too far, too fast and may cause crippling injury or death if the entrant gets entangled. Powered equipment can also create dangerous sparks in a volatile atmosphere and will be useless in a power outage.



Rescue Tips

- If there's a chance of falling, the entrant needs fall protection. Some winches have a shock-absorbing retractable cable. Or you can use a fall line or tag line — a nylon rope worn with the retrieval line. A section of the rope may be fitted with a lanyard to absorb the impact of a fall.
- Know your ropes: all rescue rope should be OSHA-certified. Choose rope with thimbles or other hardware spliced into the ends that can be attached to D-rings on the body harness.
- Think in terms of backup systems. Be prepared if a piece of equipment fails or a cable snaps.



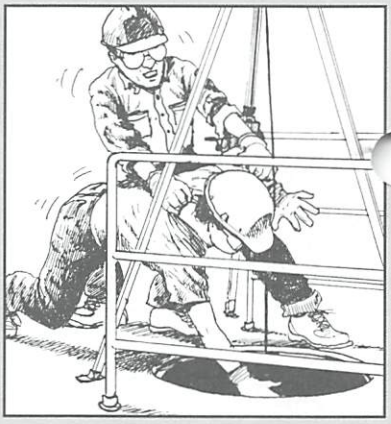
Non-Entry Limits

Obviously, you shouldn't try to pull an injured or unconscious person around corners, or drag him across or into obstacles. That's why non-entry rescue often must be limited to fairly simple vertical spaces. Do not use a mechanical retrieval system when:

- Spaces contain obstructions or turns that prevent a pull on the line from being transmitted to the entrant
- Spaces have projections or other obstacles that may obstruct or entangle the entrant while being pulled up
- The retrieval line could get entangled with an air supplied respirator or electrical cords.

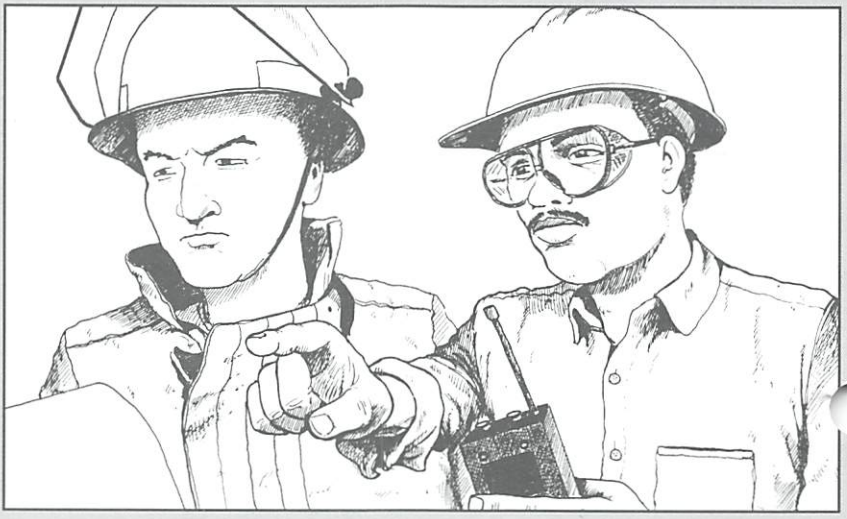
WORDS TO ATTENDANTS

STAY OUT!



It's hard to resist entering a space when a co-worker needs help. Enter only if you have been relieved by another attendant and if you are trained and authorized. Otherwise, don't enter even if you are using respiratory protection and it's just for an instant. Many people in similar circumstances have attempted rescue — and died.

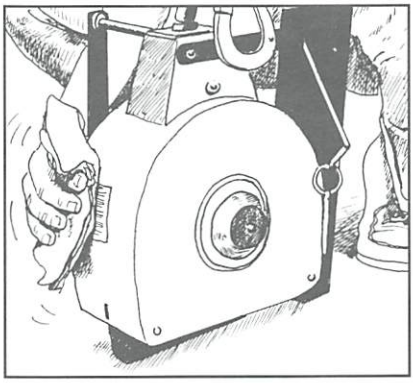
Even if you can't rescue your co-worker, you can help — outside the space. Stay on the scene to brief the rescue team on the circumstances and number of entrants in the space, and to provide a copy of the entry permit and appropriate MSDSs if necessary.

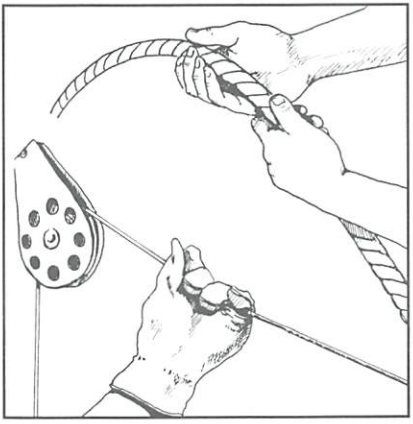


Behind the Scenes

Success means practicing rescue techniques and caring for equipment:

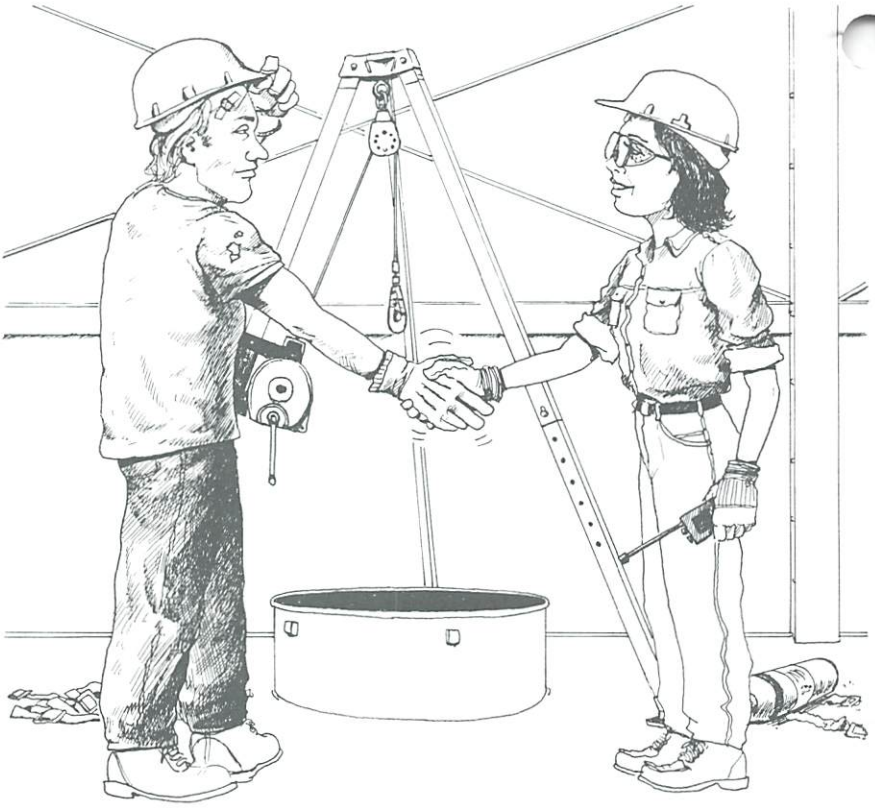
- Practice non-entry rescue repeatedly, both during training and on an ongoing basis.
- Use your retrieval system to take turns "rescuing" each other. Try to simulate real-life challenges, but never do anything that would endanger anyone.
- Attendants should also practice contacting the rescue team and rehearsing what to say when help arrives.
- Carefully clean and maintain all equipment as recommended by the manufacturer. Inspect constantly for wear and damage.
- Test the retrieval system before use to make sure that the cable feeds smoothly.
- Protect rope and cable from grit, dirt, chemicals and high temperatures. Inspect rope carefully after use by feeling and looking for damage as you run it through bare hands. Run wire cable through your gloved hand to feel for snags or kinks.
- Destroy damaged rope or cable. If rope has been used in a rescue or to break a fall, cut it up and discard it.





Summary

Your employer can provide the best training and latest equipment. But if you have to pull off self-rescue and non-entry rescue in a real emergency, it will take teamwork, practice and constant vigilance to do the job right. Doing the job right is always worth it when your life is on the line.



Quiz

1. True False In a confined space emergency, it's always best to wait for a trained rescue team to arrive.
2. True False You can create a hazardous atmosphere in a confined space just by doing certain types of work in or around it.
3. True False An MSDS is a type of ventilator used in confined spaces.
4. True False A written permit will tell you what type of protective equipment you should wear in a permit space.
5. True False An entrant must be alert for any sign of exposure to toxins or other hazards.
6. True False Use PPE exactly as specified on the written permit.
7. True False At the first sign of any hazard, an entrant should try to identify the source of the hazard.
8. True False An attendant should watch for potential hazards in or around the space.
9. True False The entrant and the attendant should remain in contact during the entry.
10. True False If non-entry rescue is necessary, a forklift or similar power equipment should be used to pull the entrant out of the space.
11. True False A hand-cranked, man-rated winch with a tripod makes it possible for one person to hoist hundreds of pounds with relatively little exertion.
12. True False The entrant should wear a sturdy leather belt and attach a retrieval line to it.
13. True False Without exception, OSHA prohibits the use of wristlets in confined space rescue.

DETACH HERE

14. True False Never crank a winch if the entrant becomes entangled.

15. True False Non-entry rescue works best in horizontal spaces.

16. True False Any attendant can enter a confined space to attempt to rescue a co-worker — as long as he or she exits within one minute.

17. True False If rescue services are called, the attendant should stay on the scene to brief them when they arrive.

18. True False Non-entry rescue techniques should be practiced on a regular basis.

19. True False Retrieval systems should be tested before each use.

20. True False After being used in a rescue, rope should be used for practice only.

DETACH HERE

ACKNOWLEDGEMENT OF TRAINING

I have read and understand the training handbook, **Confined Space Non-Entry Rescue.** I have also completed and passed the comprehensive quiz at the conclusion of this handbook.

Employee's Signature _____ Date _____

Trainer's Name _____ Date _____

NOTE: This record may be included in the employee's personnel or training file.

ALSO AVAILABLE FROM COASTAL

INTERACTIVE CD-ROM PROGRAMS

- Bloodborne Pathogens
- Confined Space Entry
- Electrical Safety
- Hazard Communication
- Lockout/Tagout
- Personal Protective Equipment

VIDEO-BASED PROGRAMS

- Accident Investigation
- Anhydrous Ammonia
- Asbestos
- Back Safety Series
- Bloodborne Pathogens Series
- Chemical Handling Series
- Chlorine Safety Series
- Cold-Weather Safety
- Commercial Driver Series
- Confined Space Series
- Contractor Safety
- DOT Drug Testing
- Electrical Safety Series
- Emergency Planning Series
- Ergonomics Series
- Eye Protection
- Fall Protection Series
- Fire Safety Series
- First Aid on the Job
- Foot Protection
- Forklift Safety Series
- Hand Safety
- Hard Hat Safety Series
- Hazard Communication Series
- HAZWASTE Transportation Series
- HAZMAT Transportation Series
- HAZWOPER Training Series
- Hearing Protection
- Heat Stress
- Highway Work Zone Series
- Hydrogen Sulfide
- Indoor Cranes
- ISO 9000 Series
- Lab Safety Series
- Laser Safety
- Lead Safety
- Line Breaking
- Lockout/Tagout Series
- Low-Lift Trucks
- Machine Guarding
- Motor Vehicle Awareness
- Off-the-Job Safety Series
- Office Safety
- OSHA Inspection Series
- Personal Protective Equipment
- Pollution Prevention Series
- Pro-active Safety Series
- Process Safety Series
- RCRA
- Respiratory Protection Series
- Safety Orientation
- Slips, Trips & Falls
- Smoke-Free Workplace
- Stairways & Ladders
- Static Electricity
- Substance Abuse
- Trenching & Shoring Series
- Tuberculosis Awareness
- Video Display Terminals
- Winter Driving
- Welding Safety Series
- Workplace Violence

ILLUSTRATED EMPLOYEE HANDBOOKS

- Asbestos Awareness
- Back Safety
- Bloodborne Pathogens Series
- Chlorine Safety
- Confined Space Series
- Contractor Safety
- Drum Handling
- Electrical Safety Series
- Ergonomics
- Eye Protection
- Fall Protection Series
- Fire Safety
- First Aid
- Foot Protection
- Forklift Safety Series
- Hand Safety
- Hazard Communication Series
- HAZMAT Transportation Series
- HAZWOPER Training Series
- Hearing Protection
- Heat Stress
- Indoor Cranes
- Lab Safety
- Lockout/Tagout Series
- Low-Lift Trucks
- Machine Guarding
- Motor Vehicle Awareness
- Office Safety
- Personal Protective Equipment
- Pollution Prevention Series
- Process Safety
- Respiratory Protection
- Safety Orientation
- Slips, Trips & Falls
- Static Electricity
- Trenching & Shoring
- Video Display Terminals

COASTAL®

CAT. NO. CSR02H

9410